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Annex "A," Subparagraph 3a,
Economic Background

AGRICULTURE

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I. INTRODUCTION

The Southwest China region is formed of four provinces - Szechwan, called "the heavenly kingdom"; Sikang, an area of awesome mountains and dense forests; Yunnan, home of many different brother nationalities; and Kweichow, the settlement of the Miaos. The topography varies considerably, the climate is as variable, and crops are raised in abundance. The Red Basin in Szechwan, watered by the Yangtze and its tributaries, is especially fertile, and the Chengtu plain is one of the most famous rice producing areas in China. In addition to being the richest province for grain production in Southwest China, Szechwan also produces large quantities of cotton, tung oil, sugar cane, silk, rapeseed, and fruit.

II. CULTIVATED LAND AND RURAL POPULATION

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The total population of Southwest China is a little over 98 million,[1] according to a

1. Jen-min Jih-pao [People's Daily], Peking, Nov. 1, 1954, p. 1.

1:Stanford U. S-4, 5 1956 AF16 SW China
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475 according to an incomplete report made in 1952, there were approximately 200 state farms of varying sizes in Southwest China.[13]

V. AGRICULTURAL PRODUCTION

A. Production of Grain

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433 Szechwan Province produces more grain than other provinces in the Southwest China region. The entire region produces approximately 17 per cent of the grain produced in China as a whole; Szechwan Province alone produces 10 per cent of the country's grain; the other three provinces together produce only 7 per cent of the total for the entire country.

The western Szechwan plains, irrigated by the 2,000-year-old Tu-chiang Yen Reservoir, is considered one of the richest granaries in China.[14] The province of

13. Kung-fei T'u-kai Pen-chih Chi Ch'i Yen-pien [Land Reform and Its Development in Communist China], Taipei, 6th Section, Central Reform Committee, Nationalist Party, 1952, p. 63.

14. China Daily News, Aug. 31, 1955.

1:Stanford U. S-4, 5 1956 AF16 SW China AF16
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243 Szechwan was expected to produce approximately
433 375,000,000 shih-piculs (20,625,000 tons) of grain in 1955, an increase of 23.5 per cent over the amount produced in 1949.

Prior to 1952, Kweichow Province was not self-sufficient in its production of grain. It had the reputation of being a province in which the people were forced to live from hand to mouth. In 1953, for the first time in the history of the province, the harvest of grain was enough to meet the demand of the local population.[15] The output of grain in Kweichow in 1954 and 1955 was higher than in 1953. During July-August 1955, approximately 807,400 shih-piculs (44,407 tons) of grain were "exported" from the province.[16] In the "crop year" (July to June) 1954-55, approximately 4.7 million shih-piculs (258,500 tons) of grain were exported from Kweichow Province.[17]

Grain production in Yunnan Province increased after the adaptation of improved techniques and the introduction of more modern farm implements. In spite of a period of drought in 1953 and floods in 1954,

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15. New China News Agency, Kweiyang, Aug. 26, 1955.
16. Ibid.
17. Ibid.

1:Stanford U. S-4, 5 1956 AF16 SW China
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243 the plan for grain production was overfulfulled,
433 according to Communist reports.[18]

Table 2 shows the progress of grain production in the Southwest China region.

Table 2. Grain Production in Southwest China

Unit: million. S = shih-p'iculs. T = tons.

Grains	1949 *	1951 *	1952 #	1953 x	1954 x	1955 y
Rice	135,000 S (7,425 T)	167,040 S (9,187 T)	291,200 S (16,016 T)	293,832 S (16,162 T)	301,840 S (16,601 T)	320,544 S (17,630 T)
Wheat	56,250 S (3,094 T)	69,600 S (3,828 T)	45,240 S (2,488 T)	45,649 S (2,510 T)	46,893 S (2,579 T)	49,799 S (2,739 T)
Soyabeans	11,250 S (618 T)	13,920 S (766 T)	11,960 S (658 T)	12,068 S (663 T)	12,937 S (681 T)	13,165 S (724 T)
Tubers	60,000 S (3,300 T)	74,240 S (4,083 T)	20,800 S (1,144 T)	20,988 S (1,154 T)	21,560 S (1 ,187 T)	22,896 S (1,259 T)
Others[z]	112,500 S (6,188 T)	139,200 S (7,656 T)	150,800 S (8,294 T)	152,163 S (8,369 T)	156,310 S (8, 597 T)	165,996 S (9,130 T)
Total	375,000 S (20,625 T)	464,000 S (25,520 T)	520,000 S (28,600 T)	524,700 S (28,858 T)	539,000 S (29,645 T)	572,400 S (31,482 T)

* Economic Year Book 1952, Hong Kong, Economic Bulletin, 1952, pp. 37-38. The production data of various crops were estimated according to percentage distribution in 1946.

\# Economic Bulletin, Hong Kong, March 16, 1953, p. 12.

x China Daily News, New York, August 4, 1955, Ch'en Yün's report to the National People's Congress on July 21, 1955, and Nov. 24, 1955. The data of various crops were calculated according to the percentage distribution in 1952.

y Based on Li Hsien-nien's Budget Report of 1955, New China News Agency, Peking, July 28, 1955. The data of various crops were calculated according to the percentage distribution in 1952.

z Including millet, corn, kaoliang, barley, oats, broad beans, and peas.

18. Wen-hui Pao [Wen-hui Daily], Hong Kong, June 13-14, 1955.

1:Stanford U. S-4, 5 1956 AF16 SW China
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433 In analyzing the above table, it will be noticed that grain production in Southwest China has shown a consistent increase since 1949. If 1949's output is taken as 100, the index of grain production increased to 124 in 1951, 139 in 1952, 143 in 1953, 145 in 1954, and 153 in 1955.

In terms of acreage planted in various food crops in 1946, rice led in the Southwest Region by 7.4 million shih-mou (1.2 million acres), constituting about 34 per cent of the total grain acreage. Table 3 shows the total acreage of various grain crops in three of the four provinces in the Southwest Region:

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1:Stanford U. S-4, 5 1956 AF16 SW China
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Table 3. The Acreage of Grains in Southwest China 1946*

(Unit - 1,000. S - shih-mou. A = acres.)

Crops	Szechwan	Yunnan	Kweichow
Rice	30,259 S	10,317 S	7,436 S
	(5,043 A)	(1,719 A)	(1,239 A)
Wheat	24,887 S	5,864 S	4,672 S
	(4,148 A)	(977 A)	(779 A)
Barley	12,476 S	2,508 S	3,372 S
	(2,079 A)	(418 A)	(562 A)
Other Grains#	37,546 S	11,623 S	5,909 S
	(6,258 A)	(1,937 A)	(985 A)
Tubers	9,276 S	369 S	406 S
	(1,546 A)	(62 A)	(68 A)
Total	114,444 S	30,681 S	21,795 S
	(19,074 A)	(5,113 A)	(3,633 A)

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* Director of Budgets, The Statistical Year Book of the Republic of China, Nanking, 1948, pp. 73-74. Figures on the acreage of grains in Sikang Province are not available.

including millet, corn, kaoliang, oats, peas, and broad beans.

1:Stanford U. S-4, 5 1956 AF16 SW China AF16

Table 4. Grain Supply in Southwest China, 1954

(Unit = Million tons)

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Grains	Gross Production#	Supply After Provision for Seeds, Fodder and Waste		Supply After Milling		Total Net Supply After Converting into Rice-Equivalent	
		Conversion Standard*	Quantity	Conversion Standard*	Quantity	Conversion Standardy	Quantity
Rice	16,601	92.01	15,275	92x	14,053	1.00	14,053
Wheat	2,579	86.47	2,230	80	1,784	1.02	1,820
Soyabeans	681	81.94	558	100	558	0.99	552
Tubers	1,187	64.00	760	100	760	0.28	213
Others z	8,597	76.80	6,602	89	5,876	1.00	5,876
Total	29,645		25,425		23,031		22,514

* FAO Balance Sheet for 1933-37, compiled from FAO World Food Survey, Food Balance Sheet for China, 1931-37.

See Table 2.

x The Chinese Communist milling standard for rice is 92, and this figure is used for the present calculation.

y Derived from the quantity of calories of different grains and tubers using the conversion standard of FAO, 3,430 calories = one kilogram (2.2 pounds) of rice as our basis of calculation.

z Including corn, millet, kaoliang, barley, oats, broad beans, and peas.

[facing p. 757]

1:Stanford U. S-4, 5 1956 AF16 SW China
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B. The Adequacy of Grain Supply

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433 One of the most important problems involved in the production of grain in Southwest China is the need to determine the adequacy of supply as it meets or fails to meet the local demand for grain. In order to estimate supply and demand, the following procedure was adopted: (1) data on the gross production of various grains in 1954 were used as the basis for calculation; (2) allowance and deductions were made to provide for the amounts necessary to provide seeds for re-sowing, the amounts necessary as fodder, and the amounts considered waste; (3) allowance was made for the varying losses of the several types of grain during the milling process; (4) all unhusked grains were reduced to milled products suitable for human consumption; it was then necessary to convert all grains other than rice into "rice-equivalents," according to the accepted standard; and (5) in determining the total demand for grain, the actual population, regradless of age or sex, was figured in terms of the equivalent number of "adult males."

The process for conversion of grain into "rice-equivalents" is shown in Table 4. The process for conversion of the population of the provinces of the Southwest Region into equivalent "adult males" is shown in Table 5.

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Table 5. Population in Terms of Equivalent "Adult Males"*

Province	Population	Population in Equivalent "Adult Males"
Szechwan	62,303,999	51,089,279
Sikang	3,381,064	2,772,473
Yunnan	17,472,737	14,327,644
Kweichow	15,037,310	12,330,594
Total	98,195,110	80,519,990

* In making this conversion, the co-efficient of 0.82 is used. It represents the mean between 0.76 derived by C. M. Chiao in his work, China's Food and Population, Shanghai, 1937, and 0.88 worked out by T. H. Shen in his book, Agricultural Resources of China, New York, 1951.

1:Stanford U. S-4, 5 1956 AF16 SW China
[redacted] AF16

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433 Using the statistics in Tables 4 and 5 as a basis for calculation, the total supply of grain -- in terms of rice-equivalents -- available for human consumption in 1954 in Southwest China was 22.5 million tons (20.46 million metric tons). If we use as the basis for estimate the Wu formula[19] of 217 metric tons of milled "rice-equivalent" grain for every 1,000 "adult males" per year, the total amount required to feed 80.52 million "adult males" in Southwest China was 17.47 million metric tons, leaving a surplus of almost 3 million metric tons (3.3 million tons) of "rice-equivalent" grain for export to other regions.

C. Cotton Production

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433 During a six-year period ending in 1955, cotton production in the Southwest China region showed a considerable growth, although some ups and downs were noted during the period. Data on cotton production in the region are given in Table 6.

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19. Yuan-li Wu, An Economic Survey of Communist China, New York, Bookman Associates, 1956, p. 165.

1:Stanford U. S-4, 5 1956 AF16 SW China AF16

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Table 6. Cotton Production in Southwest China*

(Unit = 1,000. S = shih-piculs. B = Bales)

Province	1949	1952	1953	1954	1955
Szechwan	192 S (44 B)#	557 S (127 B)	508 S (116 B)	518 S (118 B)	622 S (142 B)
Yunnan, Kweichow	48 S (11 B)	139 S (32 B)	127 S (29 B)	130 S (30 B)	155 S (36 B)
Total	240 S (55 B)	696 S (159 B)	635 S (145 B)	648 S (148 B)	777 S 178 B)

* Estimated and compiled from the following sources: Economic Bulletin, Hong Kong, Oct. 1, 1954, No. 387, p. 4; Hsin Chien-she [New Construction], Peking, Kuang-ming jih-pao she, July 16, 1950, p. 30; May 3, 1955, pp. 47-53; Li Hsien-nien's Budget Report of 1955, New China News Agency, Peking, July 8, 1955; People's Handbook 1955,

1:Stanford U. S-4, 5 1956 AF16 SW China
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Tientsin, Ta-kung pao, 1955, p. 511. The production data for Sikang Province is not available.

Bale = 480 pounds.

1:Stanford U. S-4, 5 1956 AF16 SW China
[redacted] AF16

248 433 It will be noted that the production of cotton in Southwest China has increased since 1949. Using 1949 as the base year (100), production was 289 in 1952, 263 in 1953, 269 in 1954, and 323 in 1955. The fall in cotton production in 1953 was probably caused by the government ruling which lowered the price ratio of cotton and grain in that year. Production increased in 1954 but was still below the 1952 level, although the price ratio of the two commodities had been adjusted to encourage production. The Communist regime set a production target for 1955 approximately 20 per cent above the output for 1954, and in view of the more favorable climatic conditions prevailing during 1955 it is possible that the goal was attained.

The greatest amount of acreage planted in cotton was reached in 1952. When the price of cotton was lowered in 1953, less land was planted in cotton in subsequent years. Estimated cotton acreage in Szechwan Province and in the provinces of Yunnan and Kweichow (combined) are shown in Table 7.

1:Stanford U. S-4, 5 1956 AF16 SW China
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Table 7. Cotton Acreage in Southwest China*

(Unit = 1,000. S = shih-mou. A = acres)

Province	1949	1952	1953	1954	1955
Szechwan	326 S (42.3 A)	911 S (151.8 A)	592 S (98.7 A)	604 S (100.7 A)	725 S (120.8 A)
Yunnan, Kweichow	60 S (10.0 A)	168 S (28.0 A)	109 S (18.2 A)	111 S (18.5 A)	133 S (22.2 A)
Total	386 S (64.3 A)	1,079 S (179.8 A)	701 S (116.9 A)	715 S (119.2 A)	858 S (143.0 A)

* Estimated and compiled from the following sources: New Construction, Peking, July 11, 1950, p. 30; May 3, 1955, pp. 47-53; People's Daily, July 24, 1955; Economic Bulletin, Hong Kong, Sept. 13, 1954, p. 4; Oct. 1, 1954. Figures on the cotton acreage of Sikang Province are not available.

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433 Most sections of the Southwest provinces are rice-producing regions. As will be noted in Tables 7 and 8, in 1953 and in 1954 parity prices were lower than in 1952; the total acreage under cultivation in these years dropped correspondingly. Thus changes in parity price are reflected by changes in the amount of acreage devoted to cotton in any given year.

To publicize a "bumper harvest" campaign, the Communist regime bestowed the title of "model producer" on any farmer who was able to report an increased yield of cotton per unit of land. In most cases, the yield had been increased by the application of modern farming techniques -- careful irrigation, the use of chemical fertilizers, improved farm implements, the planting of two or three crops a year, careful selection of seeds, and more efficient methods of cultivation. Of course, isolated cases of increased yields would not appreciably alter the average yield. What increases there have been in Southwest China since 1949 are indicated in Table 9.

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Table 9. Average Cotton Yield in Southwest China*
(Unit: C = catties per shih-mou. P = Pounds per acre)

Province	1949	1952	1953	1954	1955
Szechwan	22.1 C (145.7 P)	30.8 C (203.3 P)	36.0 C (237.6 P)	37.8 C (249.5 P)	37.8 C (249.5 P)
Yunnan Kweichow	23.0 C (152.0 P)	30.8 C (203.3 P)	36.0 C (237.8 P)	37.9 C (249.9 P)	37.9 C (249.9 P)

* Estimated from the following sources: Hua-Shu, "Chung-kuo Ti Mien-hua Sheng-ch'an Wen-t'i" ["The Chinese Cotton Production Problem"], Hsin Chien-she [New Construction], Peking, Kuang-ming Jih-pao she, May 3, 1955, pp. 47-53; People's Daily, Peking, Jan. 27, 1950; Survey of China Mainland Press, Aug. 17, 1954, p. 29. The cotton yield per unit of land in Sikang Province is not available.

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1:Stanford U. S-4, 5 1956 AF16 SW China
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248 If we use 1949 as the base year (100),
433 the average yield per unit of land was 134
in 1952, 156 in 1953, and 164 in 1954 and 1955.

D. Other Agricultural Products

244 Southwest China's production of edible
433 oil (excluding soybean oil) surpasses the majority of regions in China, and the output of oil from rapeseeds ranks first on the Mainland. It was estimated that the total production of rapeseed oil in Szechwan Province alone amounted to 108,000 metric tons (118,800 tons) in 1955, an increase of 28 per cent over the amount produced in the preceding year.[20]

249 In addition to the production of rapeseed,
245 Szechwan Province is also the chief producer
433 of sugar cane and oranges. Tremendous quantities of sugar cane are grown on the plains of Chengtu; the output of sugar cane in 1955 was 1,180,000 tons more than the output
245 in 1949, according to one report.[21] The
433 oranges and tangerines grown in Szechwan fill all local needs and are exported to other parts of China as well as to the Soviet Union

20. China Daily News, New York, Aug. 31, 1955.

21. Wen-hui Pao [Wen-hui Daily], Hong Kong, July 25, 1955.

1:Stanford U. S-4, 5 1956 AF16 SW China
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433
245 and her satellites. According to one estimate,
[439] the annual export of fruit from Szechwan brings to China in return 4,000 tons of steel products.[22]

241 Szechwan Province also produces raw
433 silk, ramie, herb medicines, hogs, and over
245 400 different "native products," of which at least 40 are for export.[23] The leading export is tung oil, of which Szechwan produces an amount second only to that produced in Hunan Province in the Central-South Region. The prewar average production of tung oil was estimated to have been 1,000,000 shih-piculs (55,000 tons), and in 1947 this amount had been increased to 1,292,372 shih-piculs (71,080 tons).[24]

245 The principal special products of Yunnan
433 Province are tea, herb medicines, and oil-bearing crops such as rapeseeds and peanuts. "P'u-erh" tea and the ball of compressed green tea leaves known as "T'o-ch'a", produced in Yunnan, are popular throughout China.[25]

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22. Ibid.
23. Ibid.
24. Ma Chi, Chung-kuo Ti Shen-lin [China's Forestry], Shanghai, Commercial Press, 1952, p. 45.
25. China Daily News, New York, Aug. 15, 1955.

245 The Communists have ordered the increased
433 production of tea. The production target set for Yunnan in 1955 was approximately 48 per cent higher than the output in 1954, which in turn was 21 per cent above the amount produced in the preceding year.[26]

According to a radio report from Peking, the province of Yunnan has been designated as one of the major coffee growing districts in Communist China. The region abounds with wild coffee plants; the Communists propose that in the spring of 1956 millions of coffee plant seedlings be transplanted and cultivated.[27] The first harvest is expected in three years' time, and plants for processing coffee beans are to be built.[28]

241 Kweichow Province has comparatively
433 poor agricultural resources. With the exception of grain, this area does not produce a significant quantity of any important commodity. The output of tung oil and tobacco amounts to about 450,000 shih-piculs (24,750 tons) per
273 year.[29] "Mao-t'ai" wine, which resembles dry
433 gin, has reportedly gained an international reputation and has become one of the leading exports from the province of Kweichow.

26. New China News Agency, Kunming, April 6, 1955.

27. Examiner, San Francisco, Nov. 6, 1955, p. 9.

28. Ibid.

29. China Daily News, New York, August 16, 1955.

1:Stanford U. S-4, 5 1956 AF16 SW China
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000 exports from the province of Kweichow.[30]

241 313 433 Sikang Province, with a population a little over three million, is a comparatively undeveloped area. Its principal products, in addition to grain, are herb medicines and lumber. Sikang is considered one of the chief lumber centers in China. In the regions of the Ch'ing-i River, the Ta-tu River, the Ya-lung River, and the Sikang-Tibet plateau there are forests over 500 years old.[31] Lumber production[32] in Sikang in 1954 was reported to be 34 times that of 1950. However, since transportation facilities have not yet been fully developed, and lumber resources of Sikang Province cannot be fully utilized.

VI. WATER CONSERVATION AND IRRIGATION

312 The most renowned irrigation system in Southwest China is the Tu-chiang Yen (Tu-chiang Irrigation Works) in Szechwan Province. It was built in 250 B.C. by order of Li Ping, governor of Shu (Szechwan) during the Ch'in Dynasty. Li was an able administrator and

30. Ibid.
31. People's Daily, Peking, Oct. 21, 1954.
32. Ibid.

312 steadily increased throughout the provinces of the Southwest Region.

VII. CONCLUSION

241 433 The Communist regime has given special attention to the intensive development of the agricultural resources of the Southwest Region. In Southwest China, the province of Szechwan plays the most important role in the production of grains and commercial crops. Since 1953, even the provinces of Yunnan and Kweichow, where the supply of foodstuffs has been generally inadequate, are asserted to have become more or less self-sufficient. Surplus grain from Szechwan is available in cases of emergency elsewhere in China, and the province is relied upon to make up the grain deficits of other regions. Southwest China also produces in abundance a number of commodities suitable for export, including tung oil, tea, silk, canned meats, wine, and fruit.

474 The movement to extend the authority of agricultural producers' co-operatives throughout the rural districts of Mainland China has accelerated since the promulgation of the "Resolution on Co-operativization" in November 1955. Since the principle of "mutual-aid" is counter to traditional Chinese practice, it will doubtlessly meet strong resistance among the peasants as soon as the cadres relax their

1:Stanford U. S-4, 5 1956 AF16 SW China
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II. MANUFACTURING INDUSTRIES

433 Despite the program of expansion during World War II, industrial development in Southwest China is minor compared to that in the maritime provinces (See Table 9).[1]

433 178 Before 1940, there were few modern factories in the Southwest. After the removal of the Nationalist Government to Chungking, an attempt was made to expand industrial production in the Southwest provinces to meet China's wartime needs and lessen the threat of inflation to the economy of Free China. Although the result fell short of the intended objective, a comparatively substantial increase in industrial production occurred in the provinces of the Southwest Region. The government itself owned many industries and offered subsidies to private enterprises. Continued price increases as a result of inflation and the lack of outside competition as a result of wartime blockade encouraged further expansion. After the war ended, many so-called "extra-marginal" firms went bankrupt. Some government enterprises were abandoned in order that personnel could be transferred to more efficient plants as they became available in other sections of the country, particularly in Manchuria and Formosa. Because of these changes, it is possible that industrial production in Southwest China decreased during the postwar years.

[1] [Table 9 is missing -- Analyst]

1;Stanford U, S-4, 5 1956 AF16 SW China
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433 Comprehensive information concerning production in Southwest China under Communist domination is not available. The following statistics, released by a Communist-controlled newspaper in Chungking, are probably unreliable but offer an indication of the relative emphasis placed on various industries by the Communist regime.

Table 8. Index of Industrial Production* in Southwest China

Industry	Production Index (pre-1949 peak = 100)
Electric power	116
Steel ingots	700
Steel rails	380
Cast iron	353
Cement	190
Caustic soda	863
Cotton yarn	168
Cotton cloth	183
Paper	429
Salt	147
Wheat flour	227
Matches	272
Cigarettes	150

* Hsin-hua Jih-pao [New China Daily], Chungking, Sept. 29, 1942, p. 1.

433 These production indices should be read with caution; because of unusually low production in the base period (pre-1949 peak), a small increment in the absolute volume of production in a later year will appear as a sharp increase in the production index.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

823 The Basin has often been referred to by western writers as "the Eden of the Flowery Republic," or the "Garden of Asia." By the Chinese themselves, it is popularly called the "Tien Fu," which literally means the "Treasury of Heaven." Although these 241 names may appear exaggerated, they do suggest the agricultural 433 richness and the amazing diversity of the products of the Basin. Normally, Szechuan Basin leads all China in the production of corn and rape. It holds second place as a producer of rice, potatoes, and silk; fifth place, as a producer of wheat; and sixth, as a producer of millet, kaoliang, and soy beans. The Basin has been for decades unchallenged as a producer of such internationally known products as tung oil, bristles, herbs, Cho Tsai (pickled vegetables), Wu Pei Tze, and Nanmu (lumber).

The agricultural richness of the Basin and the important role it now plays in China's present war effort are demonstrated by one significant fact. The Basin alone contributes about 60 per cent of the total food supply for the entire Chinese fighting force, comprising over five million men. The Basin is truly a granary of all free China.

314 In forestry land use, the Basin normally produces about 433 a third of the total annual production of tung oil for all China. This product constitutes a critical cash crop for farmers in many parts of the Basin, particularly in the hilly east and southeast. At present tung oil occupies a vitally important position in the export trade of the Basin. It, alone, comprised about 65 per cent of the Basin's total export trade in 1940.

[388] Another important forestry product of the Basin is white wax. The Basin normally produces over 90 per cent of the total white wax of China. Although the economic value of this unique forestry product is not great, the spectacular snow-white color of the wax tree in the late Autumn adds much to the picturesqueness of the Basin's agricultural landscape.

[386] Lacquer derived from the varnish tree, has been famous in the Basin ever since the Han dynasty (206 B.C. to 220 A.D.). It still remains one of the Basin's most reputed products.

135 The variety and abundance of strategic minerals in the Basin is second only to its richness in agricultural and forestry products. Today the Basin leads all China in the production of brine salt. Its iron reserve ranks second and its coal reserve ranks third in the country, but it is at present the leading

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

311 133 melting during the summer is reliable. At Kuan-hsien, where the torrent of the Min first enters the Plain and is taken under human control, the waters are divided into several large canals, each of which is subdivided in turn into innumerable smaller canals and ditches. The life-giving waters are impounded by dams, stone revetments, and other devices, and are held for irrigation purposes. The irrigation of the Plain has another advantage in that the soils are seldom troubled by salt and fine mud which often clog irrigated soils in other areas; because the considerable rainfall in Chengtu Plain, with an annual average of about 900 millimeters, is sufficient to prevent such clogging.

134 The soils of Chengtu Plain consist principally of the dark and dark-gray paddy soils. They are formed mainly from alluvial deposits brought down from the rich black soil (chernozem) of the Tibetan border-land and Kokonor (Fig. 9) by the mighty Min River. The natural richness of these soils is enhanced even further by the annual renewal. Because of this fact, soils of the Plain, unlike the paddy soils of many other parts of China, are not strongly podzolized.[1] However, the soil conditions do not appear to be uniform throughout the whole Plain. In fact, there are considerable differences in texture, color, and profile according to slight differences in local relief.[2] For instance, in the upper Min River region, as in Kuan-hsien, the soil texture is much coarser than in the lower Plain areas.[3]

One of the most interesting practices in connection with soil culture in the farms of Chengtu Plain, is the building of little stone wing dams or projections along the stream banks out into the water. Behind these projections, the streams, in the course of a back eddy, deposit silt and sand, which are frequently rich, particularly in organic matters. All these mud accumulations are carefully dug out and carried in baskets to the fields. Many times muddy waters have been led into basins or rice paddies in order that fine fertile silt might be precipitated on the fields.

241 433 d) Agricultural products of Chengtu Plain.--The Plain is noted for its diversity of agricultural products. It produces

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[1] Thorp, op. cit., p. 391.

[2] Ibid., p. 387.

[3] Ibid.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

three and sometimes four crops a year. It is estimated that the annual output of farm products alone include rice, 15,000,000 piculs; wheat, 8,000,000 piculs; other cereals, 2,000,000 piculs; rape seed, 500,000 piculs; tobacco, 700,000 piculs; plus medicinal herbs, vegetables, and other farm products. The total value of all these products at pre-war prices was a little over 180,000,000 dollars, or 45 dollars per capita for the Plain. This production represents about 15 per cent of the total volume of agricultural produce of the whole province, while the area of the Plain is only about one-sixty-seventh of the total area of the province. In other words, the Chengtu Plain produces ten times as much per unit area than the rest of the Basin.

e) Farms and fields.--Among the farm areas of the Basin, Chengtu Plain has the largest average farm. According to a survey by Professor Brown and M. L. Li, the rented farms average 30.1 mow, and the owned farms average 73.1 mow.[1] These figures are almost twice as large as the average size of farms in the Basin as a whole.[2] They are, in fact, even larger than the largest average size of farm in North China.[3] This, of course, means additional wealth and more prosperity. This undoubtedly has accounted for the large farmstead and the well-kept farms throughout the Plain (Fig. 12). Moreover, unlike other parts of the Basin, most of the farms here are not so detached. In general, the individual fields of Chengtu Plain farms are larger. According to the same survey, the average field is 3.36 mow,[4] which is three times as large as that of the hilly areas in the Basin.[5] Larger fields are made possible, of course, by the flatter topography and better water-supply here.

f) Marketing of agricultural products.--The marketing of the diverse agricultural products of the Plain is interesting. Marketing is done mainly in the nearby towns or cities throughout the year. The Plain is dotted with market towns, so that all

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[1] H. D. Brown and M. L. Li, "A Survey of Fifty Farms on the Chengtu Plain," Chinese Econ. Journal, I (1927), 1-59.

[2] Ibid.

[3] Buck, op. cit., p. 273.

[4] Brown and Li, op. cit., p. 28.

[5] H. D. Brown and M. L. Li, "A Survey of Farms of Mountain Omei Areas," Chinese Econ. Journal, I (1927), 1059-76.

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312 repairs, this Administration has also introduced numerous modern technological improvements in order to increase the durability and effectiveness of the project.

Recently, a hydrographic station has been established at the Erh Wang Shrine by the Administration to study the flow of the Min River. Projects are under way to harness the river's maximum flow of 9,500 cubic meters per second[1] to generate electricity for the Chengtu Plain. Two small hydro-electric plants are in operation at Chengtu and Ching-tang.[2] The Administration is contemplating building a 12,650 kilowatt power plant at Kuanhsien. A 23-kilometer canal will be cut to link the Inner and Outer rivers between Wen-chiang and Chengtu to maintain the Chengtu city water-supply and navigation between the two rivers. The Administration also has plans for the dredging of the existing canals and the digging of new ones to control more effectively the flow in both rivers, and to repair the tributary creeks to increase by another 600,000 mow the farms irrigated by the system, and eventually bring the entire Chengtu Plain under irrigation.

Among all the geographic features of Szechuan Basin, the Tu Chiang Yen Irrigation Works holds the key to the sustained prosperity of the agricultural land-use of the Basin, particularly of Chengtu Plain. Indeed, it commands the special attention of all geographers.

2. The Specialized "Commercial" Agricultural Area of Lower To-Fou Valleys

241 433

Comparing to the General Grain Farming area of Chengtu Plain, this agricultural area of Lower To-Fou valleys (Fig. 24) is noted by its specialized "commercial" products, such as sugar-cane, cotton, mulberry trees, and citrus fruits. About 85 per cent of the Basin's total production of sugar-cane, 65 per cent

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[1] Pao, op. cit., p. 48.

[2] According to the recent (1935) survey by Huang Hui, a prominent hydraulic engineer of the National Reconstruction Commission, it is highly feasible to develop multiple purpose water-power projects in the upper reaches of the Min, where the present source of irrigation water originates. These projects, if established, would also benefit the irrigation works, particularly by lightening the annual dredging work and reducing the operation costs (cf. section on "Potential Water-Power Development of Szechuan," Report of Chinese Engineer's Association Investigation of Szechuan (1936).

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of its total cotton, and 55 per cent of its silk are produced here in this agricultural area.

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With its combined and greatly varied agricultural and horticultural products, this area compares favorably (in terms of agricultural prosperity) to that of the Chengtu Plain. But, however, unlike the Chengtu Plain, the agricultural land-use of this area is greatly handicapped by its insufficient supply of water for irrigation. This defect is largely due to the prevalence of the high porosity of the bed rocks[1] in this area, where water cannot be accumulated and stored up for irrigation purposes. This condition is especially detrimental to rice culture which requires flooded fields. Consequently, in many districts of this area, the plantation of rice is greatly limited. This factor, in turn, reduces considerably the agricultural prosperity of the area.

In so far as agricultural land-use is concerned, the adjustment to topography, soil conditions, and water supply here is conspicuous. In general, nearly all the alluvial lands along the river banks are used for rice, sugar-cane, cotton, mulberry trees, and other crops. On the saddle areas between hills, if the surface soil and bed rocks are not too loose or porous, paddy fields are always the rule. In the more hilly areas, where water cannot be stored for rice culture, potatoes, rape, wheat, kaoliang, and beans are the dominant crops.

Among all the agricultural areas of the Basin, this area of the lower To-Pou valleys is the most highly commercialized. For instance, in one district, Sui-ning alone, over 65 per cent of its cultivable land is devoted to cotton culture, whereas in Tse Chung district over half of its cultivated land is used for sugar-cane culture. In the actual rural economy, here, more than in any other agricultural area, farmers think more in terms of their "cash crops." This development brings up a very interesting problem in this agricultural area, that is, its insufficiency of food supply. Consequently, considerable amounts of foodstuffs are brought into here from the nearby Chengtu Plain area.

Other outstanding features of this agricultural area includes its high population density (Fig. 10) and rich salt deposits. [317]

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[1] T. S. Chen, "Geol. Structure of Central Szechuan," Geol. Bi-monthly, IV, No. 6 (1939), 35.

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312 rich water supply by the Yangtse, the Min, and other rivers. Numerous channels are built here, for instance, such as the Wu Tung-chiao and Chien Wei districts. But contrary to the practice of Chengtu Plain, and for reasons unknown, very few of these channels are used for irrigation purposes. Instead, they are principally for transportation use.

135 Other interesting features of this agricultural area include its well-balanced endowment with mineral resources. Neither like the Chengtu Plain area of western Basin--where little or no mineral deposits are found--nor similar to the anticlinal areas of the eastern Basin--where is located the largest concentration of the Basin's mineral deposits, especially coal and iron--this area is rather well-balanced in various kinds of mineral deposits. In fact, this area is reasonably rich in every one of the strategic minerals, including salt, coal, iron, petroleum, copper, gold, and aluminum. Especially the salt production is the richest and the most important at present (Fig. 20).

241 433 In agricultural richness and productivity, this agricultural area of southwestern Basin, as a whole, compares favorably with that of the specialized commercial agricultural area of the lower To-Kou valleys. This fact is evidenced by the fine, well-kept farmsteads here (Fig. 34). In terms of population density, this area also stands out as one of the five high densely populated areas of the Basin (Fig. 10).

E. Agricultural Products

241 The Szechuanese commonly claim that anything which is produced on earth may be found in the Basin. At least it is safe to say that there is scarcely an article grown in China which is not produced here in abundance. First of all, the summer field crops include rice, corn, sugar-cane, tobacco, potato, millet, kaoliang, cotton, beans of all kinds, and a great variety of vegetables and fruits. The winter crops include principally wheat, rape, beans, peas, and many others.

1. Common Food Crops

243 a) Rice.--Rice (oryza sativa) is the master crop of the Basin. It normally occupies 43,000,000 mow, or 42 per cent of the

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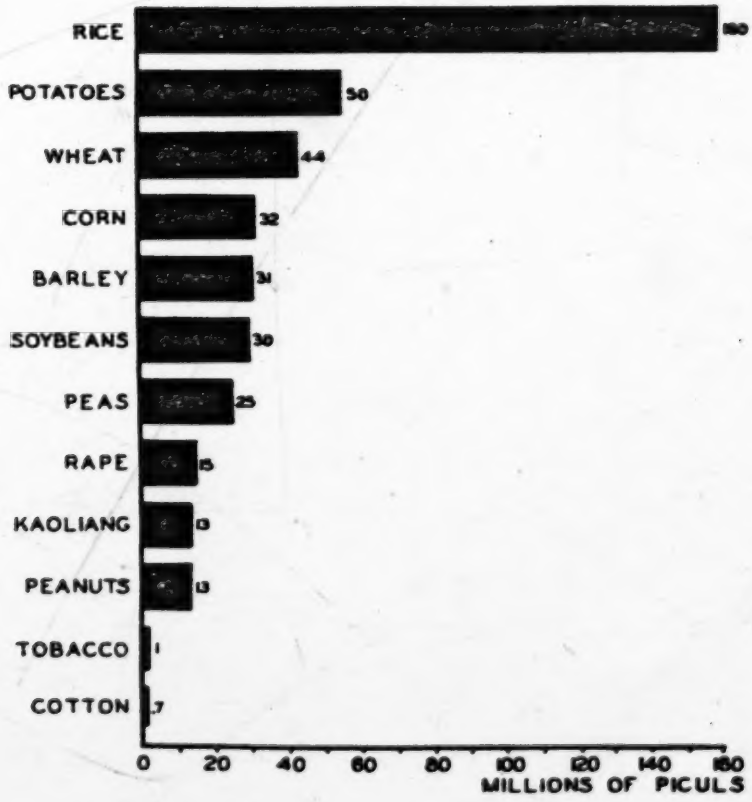
FIGURE 35

AGRICULTURAL PRODUCTION
SZECHUAN BASIN
1930-1935 AVERAGE

241
433



[Face p. 77]

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137 it wonderfully well into the general topography, soil, and climatic conditions of the Basin.

2. Principal Producing Areas

314 137 The Tung trees grow over wide areas of the Basin, but the three principal producing regions are: (1) the Yangtse area, including Ning-shui, Yun-yang, Wan-hsien, Kai-hsien, Chung-hsien, and Feng-chieh districts; (2) the Chien and Chi River areas, including Yu, Siu-shan, and Pei-ling districts; (3) the Chialing River area, including Ho-chuan and Pa-hsien districts (Pig. 36). Among them, the Yangtse Valley area, especially the districts near the anticline belt, is by far the most important.

• [433] The total annual production of tung oil is estimated to be about 760,000 piculs.[1] In 1936, Ning-shui, one of the districts which makes up the first of the three principal producing areas, led all the districts with a total annual production of 180,000 piculs; Chung-hsien, of the same producing area, in the second place, produced 140,000 piculs; and Yun-yang produced 100,000 piculs (Table 13).

The Tung trees (Aleurites fordii) which grow in the Basin are of two kinds--Chai tung, or fuel tung, and mi-tung, or rice tung. The Chai tung is taller in height, generally around 20 to 25 feet, and has rougher and larger branches. The fruit contains fewer seeds (only three to five) than the Mi tung, and thus has less oil content. Hence, very few Chai tung trees are planted here.

The Mi tung tree, the major kind planted in the Szechuan Basin, is shorter in height (about 15 feet or less) and is highly ornamental in flower and foliage. The flowers, produced in great profusion during April. are usually white, stained with pink and yellow markings. These are followed always by green apple-like fruits, which are hidden among the large, glossy, heart-shaped leaves and generally ripen between August and September. Each fruit usually contains five to seven seeds. The Tung trees begin to bear fruit in their fourth year, and their period of

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[1] C. S. Chang, The Tung Oil of Szechuan (Ming Seng Co., 1936), p. 18. But the most recent report gave the total acreage of Tung tree for 1940 as 1,150,000 mow and with an annual production of 1,140,000 piculs (cf. Yen, op. cit., p. 31). This is, of course, a little unusual and is due to the war time boom production.

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TABLE 4

PRODUCTION OF COTTON IN SZECHUAN (1936)

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Name of District	Cultivated Area (In Mow)	Total Production (In Piculs)	Percentage of Total Production
Sui-Ning.....	387,335	60,374	20.1
Shei-Hung.....	322,380	59,458	19.8
Jen-Shou.....	275,416	26,025	8.6
San-Tai.....	146,318	23,670	7.8
I-Lung.....	120,309	17,265	5.7
Nan-Pu.....	114,226	15,318	5.1
Chien-Yang.....	118,950	15,249	5.0
Pa-Chung.....	76,747	15,082	5.0
Chung-Chiang....	79,402	12,480	4.1
Yen-Ting.....	123,710	10,272	3.4
Yung-Hsien.....	49,448	7,063	2.3
Lo-Chi.....	36,676	6,693	2.2
Ching-Tan.....	59,876	5,389	1.7
Peng-Hsi.....	25,628	3,692	1.2
Pu-Shun.....	24,683	3,393	1.1
Nan-Chung.....	7,500	2,653	.8
Tung-Nan.....	19,960	1,996	.6
Wei-Yuan.....	17,860	1,917	.6
Feng-Chieh.....	6,800	1,623	.5
Lu-Hsien.....	19,958	1,605	.5
Yun-Yang.....	1,025	1,544	.5
Peng-An.....	14,596	1,167	.3
Ho-Chiang.....	3,450	1,158	.3
Tzu-Yuang.....	13,725	945	.3
Chiang-An.....	11,492	864	.2
Nan-Ch'ung.....	6,424	628	.2
Tzu-Chung.....	7,179	527	.1
An-Yo.....	1,677	352	.1
Si-Chung.....	6,008	324	.1
I-Ping.....	5,000	300	.09
Lo-Chiang.....	3,725	267	.08
Nou-Hsi.....	993	187	.06
Chang-Ning.....	3,000	168	.05
Ching-Fu.....	440	147	.04
Nan-Hsi.....	1,889	113	.03
Ching-Yen.....	1,474	98	.03
Lei-Chiang.....	1,416	97	.03
Chien-Wei.....	1,520	97	.03
Lung-Chang.....	792	44	.01
Chia-Chiang.....	408	35	.01
Total.....	2,119,415	300,279	100.00

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TABLE 6

PRODUCTION OF TOBACCO IN SZECHUAN (1936)

249
433
277

Name of District	Total Amount (In Piculs)	Per Cent of Total
Shih-Fang	290,000	48.3
Pi-Hsien	80,079	13.3
Mien-Chu	75,000	12.5
Sin-Tu	45,578	7.6
Wen-Chiang	40,000	6.6
Tsung-Nin	15,000	2.5
Chung-Hsien	6,300	1.5
Ching-Tang	6,000	1.0
Ta-Hsien	5,473	.9
Sin-Fang	4,900	.8
Yun-Yang	4,500	.7
Tung-Nan	4,500	.7
Sui-Ning	3,500	.5
Chia-Chiang	3,500	.5
Kuan-Hsien	2,300	.3
Chi-Chiang	1,600	.2
Chu-Hsien	1,590	.2
Siu-Shan	1,360	.2
Nei-Shan	1,250	.2
Te-Yang	1,200	.2
Nou-Hsi	800	.1
Liang-Shan	750	.1
Peng-Hsi	700	.1
Cheng-Tu	426	.07
Chung-Ching	410	.06
Chiang-An	400	.06
Peng-An	400	.06
Hsin-Wen	300	.05
Yung-Lien	300	.05
Nan-Hsi	200	.03
Kao-Hsien	200	.03
Pa-Hsien	120	.02
Ching-Yen	120	.02
Kai-Chiang	120	.02
Wu-Sheng	115	.01
Chien-Wei	100	.01
Hsuan-Han	100	.01
Chien-Chiang	30	.005
Total	599,221	100.000

TABLE 7

SUGAR PRODUCTION IN SZECHUAN (1936)

249
433●
263

Name of District	Total Production (In Piculs)	Per Cent of Total
Nei-Chiang	625,000	24.6
Tzu-Chung	625,000	24.6
Chien-Yang	225,000	8.8
Pu-Shun	200,000	7.9
Tzu-Yang	175,000	6.9
Chu-Hsien	100,000	3.9
I-Ping	70,000	2.9
Ching-Tang	60,000	2.3
Nan-Hsi	50,000	1.9
Te-Yang	50,000	1.9
Wei-Yuan	48,900	1.9
Lung-Chang	37,500	1.4
Kuang-Han	30,000	1.1
Jen-Shou	27,225	1.0
Kuang-An	25,000	.9
Tsung-Nai	25,000	.9
Chien-Wei	24,250	.9
	15,000	.5
Mei-Shan	10,000	.3
Sui-Ning	10,000	.3
Shih-Pang	10,000	.3
Sin-Tsing	8,000	.3
Ching-Pu	7,900	.3
Lu-Hsien	7,500	.2
Chi-Hsien	7,500	.2
Yung-Hsien	6,500	.2
Chiang-An	5,000	.1
Kai-Hsien	5,000	.1
Kao-Hsien	3,000	.1
Nou-Hsi	3,000	.1
Ho-Chuan	3,000	.1
Wan-Hsien	3,000	.1
Chiang-Tsin	2,800	.1
Ping-Shan	2,500	.09
Chang-Ning	2,500	.09
Ching-Shen	2,400	.09
Wu-Sheng	2,375	.09
Lo-Chiang	1,875	.09
Peng-Shan	1,795	.06
Lei-Po	1,650	.06
Tung-Nan	1,547	.06
Ho-Chiang	1,500	.06
Mien-Chu	1,400	.05
Yo-Chi	1,250	.04
Tung-Liang	1,000	.03
Total	2,526,867	100.00

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TABLE 10

PRODUCTION OF CITRUS FRUITS IN SZECHUAN (1936)

245
433

Name of District	Cultivated Area (Mow)	Number of Trees	Total Amount of Production (Pieces)	Per Cent
Ho-Chuan.....	13,366	410,000	45,200,000	22.3
Chiang-Tsin.....	8,334	200,000	36,200,000	17.8
Pa-Hsien.....	8,500	170,000	23,500,000	11.5
Ching-Tang.....	7,611	195,000	20,300,000	10.0
Chang-Shou.....	8,200	160,000	15,050,000	7.4
Nei-Chiang.....	3,000	60,000	12,000,000	5.9
Wan-Hsien.....	2,334	56,000	10,000,000	4.9
Tzu-Yang.....	2,400	40,000	9,000,000	4.4
Tzu-Chung.....	2,000	40,000	7,500,000	3.7
Chien-Yang.....	1,000	20,000	5,000,000	2.4
Peng-Hsi.....	2,500	60,000	4,030,000	1.9
I-Ping.....	3,824	15,000	4,000,000	1.9
Nan-Chung.....	3,000	60,000	3,600,000	1.7
Kuang-Han.....	1,000	20,000	2,000,000	.9
Chu-Hsien.....	500	10,000	2,000,000	.9
Lu-Hsien.....	500	10,000	2,000,000	.9
Tien-Chiang.....	650	16,000	280,000	.1
Feng-Chieh.....	127	2,046	170,000	.08
Sui-Ning.....	250	5,000	120,000	.05
Pih-Shan.....	200	5,000	100,000	.04
Lung-Chang.....	126	2,500	80,000	.03
Ta-Chu.....	100	3,000	50,000	.02
Total.....	69,522	1,589,546	202,180,000	100.00

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TABLE 11

PRODUCTION OF TEA IN SZECHUAN (1936)

245
433
272

Name of District	Total Amount (In Piculs)	Per Cent of Total
Ya-An	20,000	17.3
Kuan-Hsien	16,452	14.2
Ta-I	12,000	10.4
Pai-Chuan	10,800	9.3
Ho-Chiang	10,000	8.6
Yung-Ching	10,000	8.6
Kao-Hsien	6,000	5.1
Tsung-Nai	5,000	4.3
Cheng-Ko	3,000	2.5
Yung-Lien	2,500	2.1
Ping-Shan	2,000	1.7
Wan-Yuan	2,000	1.7
Tien-Chuen	1,700	1.4
An-Hsien	1,600	1.3
Chi-Chiang	1,500	1.2
Ping-Wu	1,500	1.2
Ching-Shen	1,500	1.2
Chien-Wei	1,500	1.2
Liang-Shan	1,320	1.1
O-Mei	1,050	.9
Ma-Pien	955	.8
Te-Hsien	500	.4
Nan-Chuan	500	.4
Chia-Chiang	500	.4
Mien-Chu	300	.2
Yung-Hsien	214	.1
Hsing-Wen	200	.1
Hsuan-Han	200	.1
Tung-Liang	120	.1
Chien-Chiang	85	.07
O-Pien	80	.07
Chung-Hsien	78	.06
Han-Yuan	60	.05
Kuang-An	54	.04
Tien-Chiang	40	.03
Chang-Ning	35	.03
Nou-Hsi	30	.02
Kai-Chiang	25	.02
Ming-Shan	20	.01
Pu-Chiang	20	.01
Siu-Shan	16	.01
Tang-Ling	4	.003
Wen-Chuan	3	.002
Total	115,461	100.000

231
.433

TABLE 12

PRODUCTION OF SILK IN SZECHUAN (1936)

Name of District	Total Amount of Production (In Piculs)	Per Cent of Total
Lo-Shan	1,834	21.4
San-Tai	1,000	11.7
Si-Chung	986	11.5
Ho-Chuan	952	11.1
Tung-Liang	900	10.5
Fu-Shun	443	5.1
Shei-Hung	400	4.6
Hung-Ya	313	3.6
Ching-Shen	313	3.6
Lan-Chung	300	3.5
Chi-Hsien	227	2.6
Yung-Lien	200	2.3
Nan-Ch'ung	156	1.8
Tzu-Tung	110	1.2
Mien-Yang	87	1.0
Chien-Wei	80	.9
Han-Yuan	80	.9
Tang-Ling	50	.5
Ping-Shan	38	.4
Ma-Pien	14	.1
O-Mei	13	.1
Ho-Chiang	13	.1
Chao-Hua	12	.1
Kao-Hsien	11	.1
Total	8,532	100.0

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TABLE 13

PRODUCTION OF TUNG OIL IN SZECHUAN (1936)

Name of District	Total Amount (In Piculs	Per Cent of Total
Ning-Shui	185,000	24.2
Chung-Hsien	140,000	18.3
Yun-Yang	100,000	13.1
Wan-Hsien	60,000	7.8
Siu-Shan	50,000	6.6
Feng-Tu	40,000	5.5
Feng-Chieh	20,000	2.8
Pu-Hsi	10,000	1.3
Liang-Shan	10,000	1.3
Chang-Shou	10,000	1.3
Shih-Chu	10,000	1.3
Pei-Ling	10,000	1.3
Ho-Chuan	8,000	1.0
Yu-Yang	8,000	1.0
Hsuan-Han	6,000	.7
Lu-Hsien	6,000	.7
Ta-Chu	6,000	.7
Fu-Shan	5,000	.6
Kai-Hsien	5,000	.6
Tien-Chieng	5,000	.6
Nan-Chuan	5,000	.6
Kai-Chiang	4,000	.5
Wu-Sheng	4,000	.5
Te-Hsien	4,000	.5
I-Ping	4,000	.5
Lo-Shan	4,000	.5
Ming-Shan	4,000	.5
Chiang-Tsin	3,000	.3
Ho-Chiang	3,000	.3
Chu-Hsien	3,000	.3
Yen-Ting	3,000	.3
Si-Chung	3,000	.3
Kuang-An	3,000	.3
Wan-Yuan	3,000	.3
Nan-Chung	3,000	.3
Yung-Hsien	2,000	.2
Pa-Hsien	2,000	.2
Chiang-Yu	2,000	.2
Siu-Ning	2,000	.2
Peng-Hsi	2,000	.2
Nan-Pu	2,000	.2
Peng-Shui	1,000	.1
Chien-Chiang	1,000	.1
Chi-Chiang	1,000	.1
Total	[illegible]	100.0

414
433
388